



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/046,889	01/14/2002	Chad M. Conroy	M366.12-0022	2618

7590 08/01/2003

Nickolas E. Westman
WESTMAN CHAMPLIN & KELLY
International Centre, Suite 1600
900 South Second Avenue
Minneapolis, MN 55402-3319

EXAMINER

PATEL, PARESH H

ART UNIT

PAPER NUMBER

2829

DATE MAILED: 08/01/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/046,889

Applicant(s)

CONROY, CHAD M.

Examiner

Paresh Patel

Art Unit

2829

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-5, 7-20 is/are rejected.
- 7) ☒ Claim(s) 6 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4.
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Specification

The disclosure is objected to because of the following informalities: At line 2 on page 3 "claim" should read --close--. At lines 25 of page 5 "end pillars 20" should be --end pillars 29--. Difference between guide post 18 and pins 18 is not clear..

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 7, 10-11 and 13-14 is rejected under 35 U.S.C. 102(b) as being anticipated by Gaschke (US 5748007).

Regarding claim 7., Gaschke discloses: A socket assembly [200] for holding an integrated circuit [110] during testing or burn-in comprising:

a base [15], said base having peripheral walls defining a central opening of the shape of an integrated circuit to be held against provided contacts held relative to the base;

a movable frame [frame of 60] slidably mounted relative to said base for movement toward and away from the provided contacts;

a cam actuator [70] carried on the movable frame and reacting against surfaces carried by the base, said cam actuator being movable to move the frame toward and away from the provided contacts upon selective movement of the cam actuator; and a clamping cover [60] pivotally mounted on the movable frame for movement from a position overlying the contacts to a position permitting access to the contacts.

Regarding claim 10, Gaschke discloses: the socket assembly of claim 7, wherein the cam actuator comprise a pair of cams [pair of cams of 70 on each 60] mounted to the movable frame on opposite sides of the base about a common axis [see fig. 2], and cam reaction members carried on the base and overlying the cams, respectively, the cams also engaging surfaces of the base so that as the cams are rotated, the movable frame is moved selectively toward and away from the base.

Regarding claim 11, Gaschke discloses: the socket assembly of claim 10, wherein the cam reaction members comprise bridges [95] supported on the base at opposite ends of the bridges and the bridges having walls overlying the respective cam.

Regarding claim 13, Gaschke discloses: the socket assembly of claim 11, wherein springs [100] are provided between the base and the bridges to spring load the bridges toward the base.

Regarding claim 14, Gaschke discloses: the socket assembly of claim 7, wherein the base peripheral walls [walls of 15] have recesses on inner edges thereof defining the central opening, said recesses receiving a circuit board [40] carrying the contacts [8] and the contacts having a contact plane positioned at a level so that an integrated circuit contacting the contacts is clamped against the contacts by the cover when the

Art Unit: 2829

cover is in its position overlying the contacts and the slidable frames and cover are moved toward the contacts by the cam actuator [see fig. 2 and 4].

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claim 1-5 and 16-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gaschke (US 5748007).

Regarding claims 1 and 16, Gaschke discloses: A clamping socket apparatus [200] for holding an integrated circuit [110] in contact with a connector board [10] comprising a support base [15], a support [40] for an integrated circuit board in center portions [center portion of 25 or 15] of the support base, a sliding frame [frame of 60] slidably movable in a direction generally perpendicular to a plane of the support base, a cover [60] of size to overlie the center portions and cooperating with the base to hold an integrated circuit [110] to be tested against a supported connector board [40], a cam actuator [70] for controlling the sliding movement of the sliding frame, a cam actuator lever [75 and lines 16-24 of column 4] for moving the cams between a released position wherein the sliding frame is raised from the base, and a clamping position [lines 27-28 of column 4, wherein bushing 65 is/are of 60 and shafts 35 are for 60], the cover being pivotable [on 80] from an open position [position of 60 in fig. 4A-C] to a closed position

Art Unit: 2829

[position of 60 in fig. 5B-C] overlying the base and engaging an integrated circuit to be held against a supported connector board with the sliding frame [frame of 60] in its clamped position [see position of 85 in fig. 5A-C] and a cam actuator lever engaging member [95] on the cover that is engaged by the cam actuator lever [85] as the lever moves the sliding frame from the clamping position to the release position to pivot the cover to its open position [reverse action of 85 i.e. fig. 5C-A].

Gaschke discloses all the elements except for **said cover being hinged along one edge** about a hinge axis relative to relative to the sliding frame. Rather, Gaschke's cover [60] is hinged at the frame center on pivot [80]. Conroy discloses said cover [30A] being hinged along one edge [edge of 30A near 32] about a hinge axis [axis of 32] relative to the sliding frame [movable frame members 28A-C]. It would have been obvious to one having ordinary skill in the art modify the cover of Gaschke with cover being hinged along one edge as taught by Conroy, in order to improve loading and clamping of IC modules in a burn-in socket by very positive clamping of IC so testing of IC can be done at relatively low cost.

Regarding claim 2, Gaschke and Conroy discloses all the elements except for a plurality of fins on the exterior of the cover for providing heat exchange surfaces for the cover. Rather, Gaschke's socket can be placed in a furnace so IC can be tested at the same temperature of furnace. Murphy et al. (hereafter Murphy) discloses a plurality of fins [fins of 14 or 30b] on the exterior of the cover [14 or 28] for providing heat exchange surfaces for the cover. It would have been obvious to one having ordinary skill in the art

Art Unit: 2829

to modify the cover of Gaschke and Conroy with fins as taught by Murphy, in order to provide thermal coupling to the IC being tested.

Regarding claim 3, Gaschke discloses: The apparatus of claim 1, wherein said cam actuator lever comprises a handle [85] having a cross member [U shape 85] that moves in an arc as actuated, the cross engaging the cam actuator lever engaging member on the cover to moving the cover to its open position [see fig. 5].

Regarding claims 4 and 17-19, Conroy discloses: the apparatus of claim 1, wherein said sliding frame comprises a pair of sliding side members [27A and 27B] on opposite sides of the cover, said cover being pivotally mounted to said side members [at 32], said cam actuator comprising a pair of cams [see 44 in fig. 3], one engaging each of the side members, both of the cams for the side members being operated simultaneously, the cam actuator lever engaging member on the cover comprising an arm [34B] extending outwardly from the hinge axis on an opposite side of the hinge axis from the cover [30A], and said cam actuator engaging the arm [see fig. 4] as the cam actuator moves to a position that moves the sliding frame from the clamping position to the release position to thereby pivot the cover to its open position.

Regarding claims 5 and 20, Conroy discloses: the apparatus of claim 4, wherein said cams are carried on said slidable slide members [27A-B], a pair of bridge members [20 on each 27A and 27b] overlying the cams, respectively, the cams engaging the bridge members to urge the sliding side members to the clamping position for clamping an integrated circuit against a supported connector board on the support base [lines 37-43 of column 2].

Claims 8-9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Gaschke as applied to claim 7 above, and further in view of Conroy.

Regarding claim 8, Gaschke discloses all the elements except for the socket assembly of claim 7, and a locking arm on a side of the frame, said locking arm being pivotally mounted onto the movable frame, a guide link for moving the locking arm to engage an edge of the cover as the cover moves to its position overlying the contacts.

Conroy discloses a locking arm [arm of 30B] on a side of the frame [27A-B], said locking arm being pivotally [at 32] mounted onto the movable frame [27A-B], a guide link [link 34B] for moving the locking arm to engage an edge of the cover as the cover moves to its position overlying the contacts. It would have been obvious to modify the socket assembly of Gaschke with a locking arm of Conroy, in order to provide very positive clamping to IC against the PCB during testing.

Regarding claim 9, Conroy discloses: the socket assembly of claim 8, wherein said cam actuator comprises a pair of cams [see 44 in fig. 3] on sides of the movable frame perpendicular to the side on which the locking arm is positioned, and a handle [52] for simultaneously moving the cams about cam pivot axes.

Regarding claim 12, Gaschke discloses all the elements except for the socket assembly of claim 9, wherein the cover is hinged to the movable frames along an edge of the base about an axis parallel to the cam pivot axis. Rather, Gaschke's cover [60] is hinged at the frame center on pivot [80]. Conroy discloses said cover [30A] is hinged to the movable frames [movable frame members 28A-C] along an edge [edge of 30A near

Art Unit: 2829

32] of the base about an axis [axis of 32] parallel to the cam pivot axis. It would have been obvious to one having ordinary skill in the art modify the cover of Gaschke with cover hinged along and edge as taught by Conroy, in order to improve loading and clamping of IC modules in a burn-in socket by very positive clamping of IC so testing of IC can be done at relatively low cost.

Claim 15 rejected under 35 U.S.C. 103(a) as being unpatentable over Gaschke as applied to claims 14 and 7 above, and further in view of Murphy et al.

Regarding claim 15, Gaschke discloses all the elements except for the socket assembly of claim 14, wherein the cover has a temperature sensor therein for contacting an integrated circuit that is clamped against the contacts by the cover. Murphy teaches the cover [14] has a temperature sensor [temperature sensor in 14a, see lines 23-27 of column 4] therein for contacting an integrated circuit that is clamped against the contacts by the cover. I would have been obvious to one having ordinary skill in the art to add temperature sensor as taught by Murphy in the cover of Gaschke, in order to monitor the temperature of the IC during test procedure.

Allowable Subject Matter

Claim 6 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Art Unit: 2829

The following is a statement of reasons for the indication of allowable subject matter: Prior art does not teach or suggest a clamping socket apparatus for holding an integrated circuit, wherein said cam actuator comprises a bail handle having a member that extends between opposite sides of the sliding frame, generally parallel to the hinge axis of the cover, and said bail comprising the cam lever actuator lever engaging member and said bail moving to an opposite side of the support base from its position when the cover is in its closed position, said cross member engaging the cam actuator engaging member on the cover and pivoting the cover to its open position when the bail is moved to move the sliding frame to its released position as further defined in claim 6.


Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paresh Patel whose telephone number is 703-306-5859. The examiner can normally be reached on M-F (8:30 to 4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kammie Cuneo can be reached on 703-308-1233. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and 703-872-9319 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Paresh Patel
July 28, 2003


VINH P. NGUYEN
PRIMARY EXAMINER
GROUP 2829
07/28/03